Twelfth Census of the United States.

CENSUS BULLETIN.

No. 205. WASHINGTON, D. C. June 24, 1902.

AGRICULTURE.

MONTANA.

Hon. WILLIAM R. MERRIAM,
Director of the Census.

SIR: I have the honor to transmit herewith, for publication in bulletin form, the statistics of agriculture for the state of Montana, taken in accordance with the provisions of section 7 of the act of March 3, 1899. This section requires that—

> The schedules relating to agriculture shall comprehend the following topics: Name of occupant of each farm, color of occupant, tenure, acreage, value of farm and improvements, acreage of different products, quantity and value of products, and number and value of live stock. All questions as to quantity and value of crops shall relate to the year ending December thirty-first next preceding the enumeration.

A "farm," as defined by the Twelfth Census, includes all the land, under one management, used for raising crops and pasturing live stock, with the wood lots, swamps, meadows, etc., connected therewith. It includes also the house in which the farmer resides, and all other buildings used by him in connection with his farming operations.

The farms of Montana, June 1, 1900, numbered 13,370, and were valued at $62,026,090. Of this amount, $9,365,530, or 15.1 per cent, represents the value of buildings, and $52,660,560, or 84.9 per cent, the value of land and improvements other than buildings. On the same date the value of farm implements and machinery was $3,671,900, and of live stock, $52,161,833. These values, added to that of farms, give $117,859,823, the "total value of farm property."

The products derived from domestic animals, poultry, and bees, including animals sold and animals slaughtered on farms, are referred to in this bulletin as "animal products." The total value of all such products, together with the value of all crops, is termed "total value of farm products." This value for 1899 was $28,616,957, of which amount $17,924,442, or 62.6 per cent, represents the value of animal products, and $10,692,515, or 37.4 per cent, the value of crops, including forest products cut or produced on farms. The "total value of farm products" for 1899 was nearly five times as great as that for 1889, but a part of this gain is doubtless due to a more detailed enumeration in 1900 than in 1890. The most important item enumerated in 1900, but not in 1890, is the value of animals sold and animals slaughtered on farms, which for 1899 amounted to $10,083,646, or nearly half the gain in value of farm products.

The "gross farm income," is obtained by deducting from the total value of farm products the value of the products fed to live stock on the farms of the producers. In 1899 the reported value of products fed was $5,074,730, leaving $23,542,227 as the gross farm income. The ratio which this amount bears to the "total value of farm property" is referred to in this bulletin as the "percentage of gross income upon investment." For Montana in 1899 it was 20.0 per cent.

As no reports of expenditures for taxes, interest, insurance, feed for stock, and similar items have been obtained by any census, no statement of net farm income can be given.

Special reports as to the dimensions and cost of the leading irrigation ditches and canals, the area of land under them, methods for the artificial application of water to the growing crops, and other facts relating to irrigation, were obtained by correspondence with farmers, engineers, and others. This correspondence was under the joint direction of Mr. F. H. Newell, chief hydrographer of the Geological Survey, acting as expert special agent for the division of agriculture, and Mr. Clarence J. Blanchard.

The statistics presented in this bulletin will be treated in greaterdetail in the report on agriculture in the United States. The present publication is designed to present a summarized advance statement for Montana.

Very respectfully,

L. G. Powers.

Chief Statistician for Agriculture.

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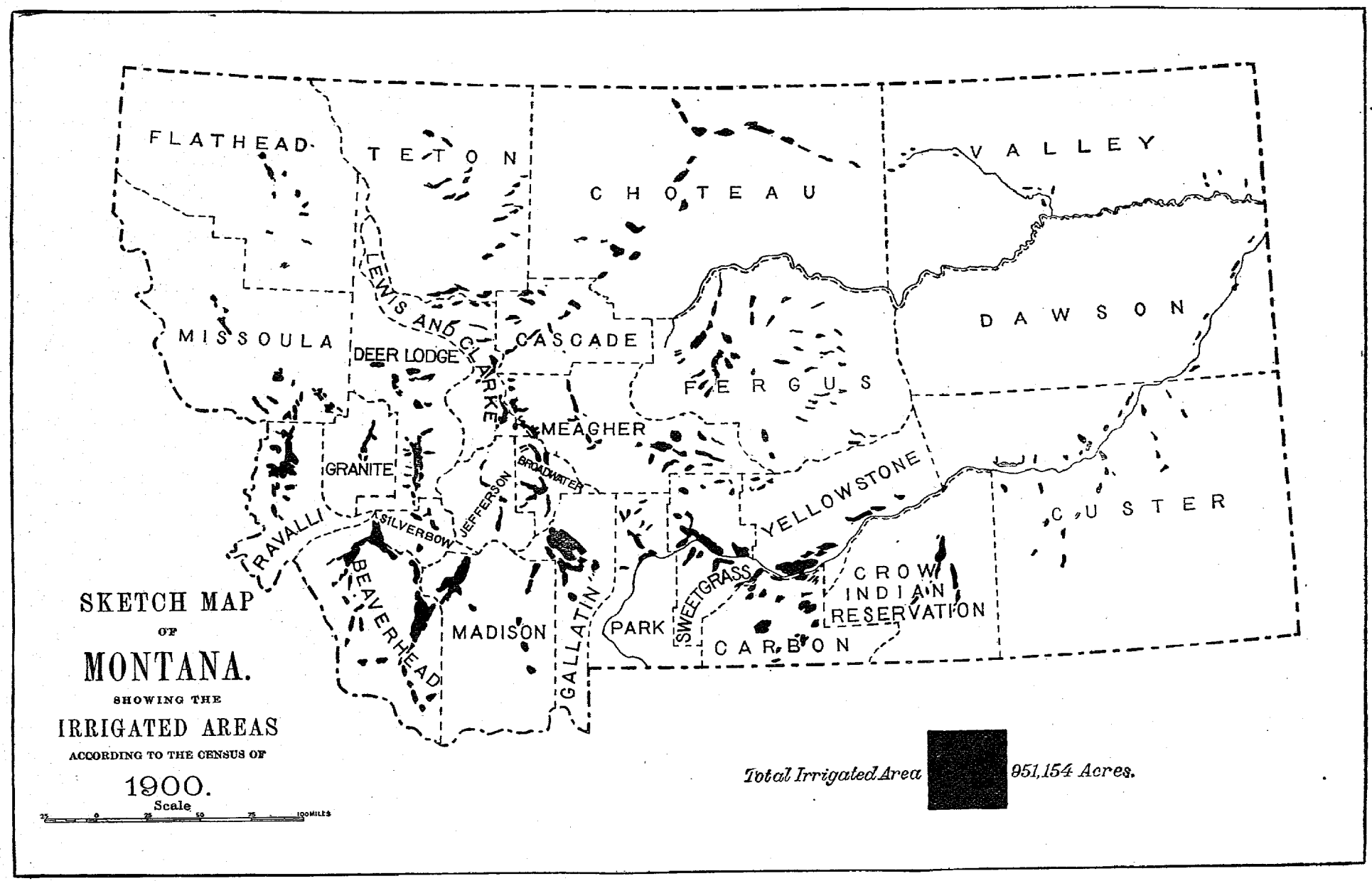
FLATHEAD
TETON
CHOTEAU
VALLEY
MISSOULA
DEER LODGE
LEWIS AND CLARKE
CASCADE
FERGUS
DAWSON
MEAGHER
GRANITE
BROADWATER
YELLOWSTONE
CUSTER
RAVALLI
SILVERBOW
JEFFERSON
BEAVERHEAD
MADISON
GALLATIN
PARK
SWEETGRASS
CROW INDIAN RESERVATION
CARBON
SKETCH MAP
OF
MONTANA.
SHOWING THE
IRRIGATED AREAS
ACCORDING TO THE CENSUS OF
1900.
Scale
25 0 25 50 75 100 MILES
Total Irrigated Area
951,154 Acres.

AGRICULTURE IN MONTANA.

GENERAL STATISTICS.

The total land area of Montana is 145,310 square miles, or 92,998,400 acres, of which 11,844,454 acres, or 12.7 per cent, are included in farms.

The state may be described as consisting of two divisions, eastern and western Montana, with the Rocky Mountains as the dividing line, the main range extending through the state in the form of a bow, with the arch toward the east.

Eastern Montana, which constitutes more than three-fifths of the total area of the state, is an extension of the "Great Plains," its surface being for the most part undulating, and broken at intervals by long, narrow valleys formed by the erosion of the rivers. The mean elevation of this part of the state above sea level is about 2,000 feet. In the extreme east lies a region known as the "Bad Lands," which is not only dry and unproductive, but practically nonirrigable, owing to the conformation of its surface. In the southwest are the valleys of the Gallatin, Jefferson, and Madison rivers, which contain large tracts of arable land, with a very productive soil.

The western part of the state is more rugged; the slope from the divide is abrupt, and the valleys, though numerous, are not extensive. Some very fertile lands are found in this region.

The agricultural lands are of three general classes—the bottom lands, lying near the streams, and possessing, as a rule, a rich, black, alluvial soil; the bench lands, whose soil is a sandy loam, capable of a wide range of cultivation; and the high bluff lands, which are suitable only for grazing purposes.

NUMBER AND SIZE OF FARMS.

The following table gives, by decades since 1870, the number of farms, the total and average acreage, and the per cent of farm land improved.

TABLE 1.—FARMS AND FARM ACREAGE: 1870 TO 1900.

YEAR.	Number of farms.	NUMBER OF ACRES IN FARMS.				Per cent of farm land improved.
		Total.	Improved.	Unimproved.	Average.	
1900	13,370	11,844,454	1,736,701	10,107,753	885.9	14.7
1890	5,603	1,964,197	915,517	1,048,680	350.6	46.6
1880	1,519	405,683	262,611	143,072	267.1	64.7
1870	851	139,537	84,674	54,863	164.0	60.7

The number of farms in 1900 was almost sixteen times as great as in 1870, and more than twice as great as in 1890, while the total acreage in farms is almost eighty-five times that reported in 1870, and six times that in 1890. The average size of farms, therefore, increased rapidly during each decade. There was a slight gain in the percentage of farm land improved between 1870 and 1880, but for the next two decades large decreases are shown. The increases in average area, and the decreases in percentage of farm land improved, are due, largely, to the addition to the farm area of large tracts of grazing land, formerly a part of the public domain.

FARM PROPERTY AND PRODUCTS.

Table 2 presents a summary of the principal statistics relating to farm property and products for each census year, *beginning with 1870.*

TABLE 2.—VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND OF FARM PRODUCTS: 1870 TO 1900.

YEAR.	Total value of farm property.	Land, improvements, and buildings.	Implements and machinery.	Live stock.	Farm products.[1]
1900	$117,859,823	$62,026,090	$3,671,900	$52,161,833	$28,616,957
1890	48,489,037	25,512,340	1,356,010	[2]21,620,687	6,273,415
1880	8,787,243	3,234,504	401,185	[2]5,151,554	2,024,923
1870[3]	2,693,324	729,193	145,488	[2]1,818,693	[4]1,676,660

[1] For year preceding that designated.
[2] Exclusive of the value of live stock on ranges.
[3] Values for 1870 were reported in depreciated currency. To reduce to specie basis of other years they must be diminished one-*fifth*.
[4] Includes betterments and additions to live stock.

In the last ten years the total value of farm property has increased $69,370,786, or 143.1 per cent; that of farms, including improvements and buildings, $36,513,750, or 143.1 per cent; that of implements and machinery, $2,315,890, or 170.8 per cent; and that of live stock, $30,541,146, or 141.3 per cent. The value of farm products for 1899 exceeds that reported for 1889 by $22,343,542, or 356.2 per cent. A part of the large gain in the value of farm products shown for the last decade is due to the fact that the enumeration of 1900 was more detailed and complete than that made by any previous census. Among the items enumerated in 1900, but not in 1890, is the value of animals sold and animals slaughtered on farms, which in 1899 amounted to $10,083,646, nearly half the gain shown in the table for the last decade.

In 1880 and in 1890 domestic animals on ranges were not enumerated, hence the values shown in the table are deficient for both these years. The value of animals on ranges in 1890 has been estimated at $10,951,425, which would make the value of all live stock on farms and ranges $32,572,112. Assuming this value to be comparable with *that reported in 1900*, there has been an increase in the last decade of 60.1 per cent.

COUNTY STATISTICS.

Table 3 gives an exhibit of general agricultural statistics by counties.

TABLE 3.—NUMBER AND ACREAGE OF FARMS, AND VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, JUNE 1, 1900, WITH VALUE OF PRODUCTS OF 1899 NOT FED TO LIVE STOCK, AND EXPENDITURES IN 1899 FOR LABOR AND FERTILIZERS, BY COUNTIES.

COUNTIES.	NUMBER OF FARMS.		ACRES IN FARMS.		VALUES OF FARM PROPERTY.				Value of products not fed to live stock.	EXPENDITURES.	
	Total.	With buildings.	Total.	Improved.	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		Labor.	Fertilizers.
The State	13,370	12,878	11,844,454	1,736,701	$52,660,560	$9,365,530	$3,671,900	$52,161,838	$23,542,227	$5,077,340	$3,940
Beaverhead	518	462	385,635	168,451	2,884,060	342,390	153,130	2,072,228	1,095,278	281,450	130
Broadwater	222	216	106,799	49,484	955,900	179,180	66,810	929,440	489,971	85,950	10
Carbon	871	851	151,988	77,165	1,528,240	336,020	188,860	1,545,622	844,542	111,380	30
Cascade	1,144	1,118	769,743	118,911	3,738,200	723,230	306,020	3,021,148	1,577,663	339,200	100
Choteau	762	725	546,236	90,242	2,347,680	574,380	224,440	5,977,041	1,823,068	543,780	25
Custer	804	706	642,563	90,359	1,915,430	428,780	170,610	7,137,325	2,454,061	387,850	300
Dawson	259	238	56,402	19,645	124,340	119,430	56,960	2,647,016	408,512	124,460	----------
Deerlodge	564	556	359,518	92,489	2,532,220	487,220	155,720	1,519,157	1,007,270	205,720	590
Fergus	732	718	704,860	121,389	3,227,100	584,630	237,930	4,464,657	1,891,934	534,390	50
Flathead	767	756	160,546	64,109	1,768,410	408,270	157,050	499,954	830,357	78,600	50
Gallatin	950	934	368,706	172,287	4,609,400	707,310	295,590	1,054,990	1,399,404	174,240	580
Granite	205	198	65,764	26,272	617,980	167,540	57,010	430,429	301,998	54,260	150
Jefferson	235	234	74,385	28,176	724,310	187,950	45,090	487,162	221,192	36,280	----------
Lewis and Clarke	531	521	443,125	63,682	2,407,740	411,740	134,930	1,658,958	838,489	193,620	680
Madison	674	652	317,216	111,836	2,521,360	667,990	170,830	2,285,125	1,000,589	208,490	200
Meagher	198	189	599,204	52,419	1,666,620	272,180	75,190	2,265,271	946,541	228,320	----------
Missoula	615	610	148,606	47,982	1,673,630	390,840	122,780	646,778	549,095	95,570	250
Park	532	521	258,810	44,566	1,410,760	276,640	112,650	1,109,548	699,442	106,620	100
Ravalli	891	880	177,652	81,012	2,888,510	711,630	178,130	1,466,608	900,386	287,780	----------
Silverbow	215	215	47,814	13,383	434,560	163,670	39,490	816,800	316,198	73,550	20
Sweet Grass	402	383	380,188	39,495	1,398,720	327,040	100,460	1,922,485	795,848	236,960	550
Teton	347	325	274,074	49,768	1,336,340	260,130	99,350	3,035,450	928,111	270,480	75
Valley	226	198	66,326	21,278	244,230	107,970	22,990	1,944,605	402,058	109,720	50
Yellowstone	383	356	1,184,916	58,024	2,258,300	353,810	116,900	2,642,538	1,441,520	286,020	----------
Blackfeet[1]	36	36	5,000	5,000	11,300	13,700	30,000	169,908	26,247	----------	----------
Crow[1]	1	1	3,500,000	10,981	6,975,000	25,000	300,000	334,400	141,025	----------	----------
Flathead[1]	150	146	27,960	13,420	260,470	72,060	26,950	492,425	179,030	28,280	----------
Fort Peck[1]	119	117	9,698	7,433	92,410	33,420	23,240	88,276	11,372	690	----------
Northern Cheyenne[1]	17	16	10,720	2,443	107,340	31,380	2,790	46,489	21,086	3,680	----------

[1] Indian reservation.

On account of the many territorial changes in Montana during the last decade, it is impossible to make accurate comparisons of the variations between 1890 and 1900 in many of the counties. Except in one instance there have been no decreases reported in the last ten years in counties not undergoing territorial changes.

The average size of farms in Montana is 885.9 acres. This high average is due partly to the fact that the report includes a large farm acreage from the Crow Indian reservation, which has not yet been allotted and was reported as one farm. The average varies from 174.5 acres in Carbon county to 3,093.8 acres in Yellowstone county.

The average value of farms for the state is $4,639. In Choteau, Custer, and Yellowstone counties the value of farms is approximately four times as large, and in Dawson and Fergus counties over twice as large, as in 1890. Jefferson, Missoula, and Park counties report decreases in the value of live stock.

The expenditure for labor on each farm in 1899 averaged $380. It was much greater in the cattle-raising counties, in the eastern half of the state, than in those of the western part. The expenditure for fertilizers in 1899 was less than in 1889, most counties reporting a very small amount.

FARM TENURE.

Table 4 gives a comparative exhibit of farm tenure for 1880, 1890, and 1900. Tenants are divided into two groups: "Cash tenants," who pay a rental in cash or a stated amount of labor or farm produce, and "share tenants," who pay as rental a stated share of the products.

In Table 5 the tenure of farms for 1900 is given by race of farmer, and "farms operated by owners" are subdivided into groups designated as "owners," "part owners," "owners and tenants," and "managers." These terms denote, respectively: (1) Farms operated by individuals who own all the land they cultivate; (2) farms operated by individuals who own a part of the land and rent the remainder from others; (3) farms operated under the joint direction and by the united labor of two or more individuals, one owning the farm or a part of it, and the other, or others, owning no part, but receiving for supervision or labor a share of the products; and (4) farms operated by individuals who receive for their supervision and other services a fixed salary from the owners.

TABLE 4.—NUMBER AND PER CENT OF FARMS OF SPECIFIED TENURES: 1880 TO 1900.

YEAR.	Total number of farms.	NUMBER OF FARMS OPERATED BY—			PER CENT OF FARMS OPERATED BY—		
		Owners.[1]	Cash tenants.	Share tenants.	Owners.[1]	Cash tenants.	Share tenants.
1900	13,370	12,140	624	606	90.8	4.7	4.5
1890	5,603	5,333	124	146	95.2	2.2	2.6
1880	1,519	1,439	17	63	94.7	1.1	4.2

[1] Including "part owners," "owners and tenants," and "managers."

TABLE 5.—NUMBER AND PER CENT OF FARMS OF SPECIFIED TENURES, JUNE 1, 1900, CLASSIFIED BY RACE OF FARMER.

PART 1.—NUMBER OF FARMS OF SPECIFIED TENURES.

RACE.	Total number of farms.	Owners.	Part owners.	Owners and tenants.	Managers.	Cash tenants.	Share tenants.
The State	13,370	10,402	1,190	69	479	624	606
White	13,042	10,108	1,185	69	479	598	603
Colored	328	294	5	----	----	26	3
Chinese	26	1	----	----	----	23	2
Indian	281	275	5	----	----	1	----
Negro	21	18	----	----	----	2	1

PART 2.—PER CENT OF FARMS OF SPECIFIED TENURES.

The State	100.0	77.8	8.9	0.5	3.6	4.7	4.5
White	100.0	77.5	9.1	0.5	3.7	4.6	4.6
Colored	100.0	89.7	1.5	----	----	7.9	0.9

In the last decade the number of farms operated by owners increased 6,807, or 127.6 per cent; the number operated by tenants increased 960, or nearly fourfold. In 1890, 4.8 per cent of farmers were tenants, and in 1900, 9.2 per cent were tenants. The percentages in Table 4 indicate that although the number of tenants is small, the increase in this group has been relatively more rapid than that for owners. Of the total number of farmers, 97.5 per cent are white, and 2.5 per cent, colored. The latter class includes 281 Indians, all but six of whom are owners. The farm land of the Crow Indian reservation was enumerated as one farm, with the agent in charge as manager, though many Indians were engaged in independent agricultural work on the land, and the operations were carried on primarily for their benefit.

FARMS CLASSIFIED BY RACE OF FARMER AND BY TENURE.

Tables 6 and 7 present the principal statistics for farms classified by race of farmer and by tenure.

TABLE 6.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY RACE OF FARMER AND BY TENURE, WITH PERCENTAGES.

RACE OF FARMER, AND TENURE.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	13,370	885.9	11,844,454	100.0	$117,859,823	100.0
White farmers	13,042	904.9	11,801,728	99.6	116,727,511	99.0
Negro farmers	21	210.0	4,410	0.4	46,672	1.0
Indian farmers	281	130.1	36,554		1,010,158	
Chinese farmers	26	67.8	1,762		75,482	
Owners	10,402	332.3	3,456,624	29.2	59,109,845	50.2
Part owners	1,190	1,784.9	2,124,071	17.9	21,654,416	18.4
Owners and tenants	69	731.7	50,489	0.4	675,152	0.6
Managers	479	11,171.2	5,351,005	45.2	28,693,380	24.3
Cash tenants	624	1,083.8	676,260	5.7	4,259,657	3.6
Share tenants	606	306.9	186,005	1.6	3,467,373	2.9

TABLE 7.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY RACE OF FARMER AND BY TENURE.

RACE OF FARMER, AND TENURE.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,939	$700	$275	$3,901	$1,761	20.0
White farmers	4,007	711	275	3,957	1,789	20.0
Negro farmers	1,423	268	130	407	492	22.1
Indian farmers	1,126	282	262	1,924	590	16.4
Chinese farmers	2,209	189	158	348	1,343	46.3
Owners	2,442	561	214	2,466	1,145	20.1
Part owners	7,454	1,294	442	9,007	3,569	19.6
Owners and tenants	4,550	777	311	4,147	1,903	19.4
Managers	27,619	2,420	1,313	28,551	11,926	19.9
Cash tenants	4,176	630	211	1,809	1,304	19.1
Share tenants	3,693	636	230	1,163	1,209	21.1

Of the total number of farms in Montana, 281 were operated by Indians, 26 by Chinese, and 21 by negroes. Collectively they controlled 0.4 per cent of the total farm acreage, and 1.0 per cent of the total value of farm property.

The average values of all forms of farm property are less for colored than for white farmers. The higher per cent of gross income for negro farmers does not indicate superior management, but is due to the very low average

values of their farms and the more intensive cultivation prevalent on smaller farms. The farms of the Indians are generally live-stock farms with little income, while those of the Chinese are small but intensively cultivated market gardens, located near cities or towns and yielding a high rate of gross income. Farms operated by managers have the highest average values of all forms of farm property, but the ratio which the gross income bears to the total value of the farm property does not vary widely from the state average.

FARMS CLASSIFIED BY AREA.

Tables 8 and 9 present the principal statistics for farms classified by area.

TABLE 8.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY AREA, WITH PERCENTAGES.

AREA.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	13,370	885.9	11,844,454	100.0	$117,859,823	100.0
Under 3 acres	417	1.0	421	(1)	3,894,291	3.3
3 to 9 acres	118	8.5	1,007	(1)	201,384	0.2
10 to 19 acres	118	18.8	2,216	(1)	177,028	0.2
20 to 49 acres	399	40.7	16,251	0.1	988,045	0.8
50 to 99 acres	563	77.2	43,476	0.4	1,923,697	1.6
100 to 174 acres	5,613	157.1	882,023	7.5	17,995,989	15.3
175 to 259 acres	878	219.6	192,813	1.6	5,165,584	4.4
260 to 499 acres	2,713	354.9	964,642	8.1	17,855,371	15.1
500 to 999 acres	1,257	716.1	900,121	7.6	14,514,488	12.3
1,000 acres and over	1,289	6,859.2	8,841,484	74.7	55,143,996	46.8

[1] Less than one-tenth of 1 per cent.

TABLE 9.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY AREA.

AREA.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$8,939	$700	$275	$3,901	$1,761	20.0
Under 3 acres	47	244	74	8,974	3,767	40.2
3 to 9 acres	359	484	85	278	394	23.1
10 to 19 acres	574	394	81	451	347	23.1
20 to 49 acres	976	371	111	1,018	613	24.7
50 to 99 acres	1,424	500	185	1,308	1,157	33.9
100 to 174 acres	1,394	377	159	1,276	641	20.0
175 to 259 acres	2,681	623	282	2,347	1,624	27.6
260 to 499 acres	3,226	673	270	2,400	1,256	19.1
500 to 999 acres	5,610	1,045	368	4,524	2,064	17.9
1,000 acres and over	19,614	2,267	914	19,985	7,724	18.1

The group of farms comprising from 100 to 174 acres each includes the largest number of farms, showing the frequency of quarter-section holdings, but the group containing 1,000 acres and over constitutes a far larger portion of the total acreage and value than any other.

With few exceptions, the average values of the several forms of farm property increase with the size of the farms. The high average value of live stock, and the large gross income for farms under 3 acres, are due to the fact that most of this group are live-stock farms, whose operators use public land for range purposes, and a few are market gardens and dairy farms. The incomes from these industries depend less upon the acreage of owned or rented land used, than upon the capital invested in buildings, implements, and live stock, and the expenditures for labor and fertilizers.

The average gross incomes per acre for the various groups classified by area are as follows: Farms under 3 acres, $3,721.38; 3 to 9 acres, $46.23; 10 to 19 acres, $18.44; 20 to 49 acres, $15.04; 50 to 99 acres, $14.99; 100 to 174 acres, $4.08; 175 to 259 acres, $7.39; 260 to 499 acres, $3.54; 500 to 999 acres, $2.88; and 1,000 acres and over, $1.13.

FARMS CLASSIFIED BY PRINCIPAL SOURCE OF INCOME.

Tables 10 and 11 present the leading features of the statistics relating to farms classified by principal source of income. If the value of the hay and grain raised on any farm exceeds that of any other crop and constitutes at least 40 per cent of the total value of products not fed to live stock, the farm is classified as a "hay and grain" farm. If vegetables are the leading crop, constituting 40 per cent of the value of the products, it is a "vegetable" farm. The farms of the other groups are classified in accordance with the same general principle. "Miscellaneous" farms are those whose operators do not derive 40 per cent of their income from any one class of farm products. Farms which yielded no income in 1899 are classified according to the agricultural operations upon other farms in the same locality.

TABLE 10.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY PRINCIPAL SOURCE OF INCOME, WITH PERCENTAGES.

PRINCIPAL SOURCE OF INCOME.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	13,370	885.9	11,844,454	100.0	$117,859,823	100.0
Hay and grain	3,848	404.1	1,554,918	13.1	24,029,946	20.4
Vegetables	609	187.6	114,272	1.0	1,770,893	1.5
Fruits	79	270.3	21,352	0.2	413,095	0.3
Live stock	6,048	1,578.0	9,543,538	80.6	82,708,374	70.2
Dairy produce	1,153	242.6	279,759	2.3	4,416,310	3.7
Flowers and plants	11	1.0	11	(1)	61,375	0.1
Nursery products	5	150.8	754	(1)	60,605	0.1
Miscellaneous	1,617	204.0	329,850	2.8	4,399,225	3.7

[1] Less than one-tenth of 1 per cent.

TABLE 11.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY PRINCIPAL SOURCE OF INCOME.

PRINCIPAL SOURCE OF INCOME.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,939	$700	$275	$3,901	$1,761	20.0
Hay and grain	4,240	716	285	1,004	1,075	17.2
Vegetables	1,819	429	150	510	636	21.9
Fruits	3,669	822	178	560	827	15.8
Live stock	4,979	825	333	7,588	2,857	20.9
Dairy produce	1,842	557	200	1,231	790	20.6
Flowers and plants	3,309	2,182	64	25	2,744	49.2
Nursery products	9,000	2,520	113	488	3,977	32.8
Miscellaneous	1,625	378	139	579	444	16.3

For the several classes of farms, the average values per acre of products not fed to live stock are as follows: Farms whose operators derive their principal income from flowers and plants, $2,743.82; nursery products, $26.37; vegetables, $3.39; dairy produce, $3.25; fruits, $3.06; hay and grain, $2.66; miscellaneous, $2.18; and live stock, $1.81.

The variations shown in the averages and percentages of gross income are due, largely, to the fact that in computing gross incomes no deductions are made for expenditures. The average expenditure for such items as labor and fertilizers upon fruit and vegetable farms, represents a far larger percentage of the gross income than in the case of "hay and grain," "live-stock," or "miscellaneous" farms. Were it possible to present the average net incomes, the variations shown would be comparatively slight.

FARMS CLASSIFIED BY REPORTED VALUE OF PRODUCTS NOT FED TO LIVE STOCK.

Tables 12 and 13 present data relating to farms classified by reported value of products not fed to live stock.

TABLE 12.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY REPORTED VALUE OF PRODUCTS NOT FED TO LIVE STOCK, WITH PERCENTAGES.

VALUE OF PRODUCTS NOT FED TO LIVE STOCK.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	13,370	885.9	11,844,454	100.0	$117,859,823	100.0
$0	927	221.8	205,652	1.7	3,029,690	2.6
$1 to $49	370	224.1	82,930	0.7	763,100	0.6
$50 to $99	508	192.3	97,678	0.8	1,059,780	0.9
$100 to $249	1,583	230.5	364,832	3.1	4,152,300	3.5
$250 to $499	2,088	222.2	463,895	3.9	6,137,490	5.2
$500 to $999	2,862	280.9	803,963	6.8	12,202,840	10.4
$1,000 to $2,499	3,005	522.2	1,569,081	13.3	24,992,970	21.2
$2,500 and over	2,027	4,078.2	8,256,423	69.7	65,471,653	55.6

TABLE 13.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY REPORTED VALUE OF PRODUCTS NOT FED TO LIVE STOCK.

VALUE OF PRODUCTS NOT FED TO LIVE STOCK.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,939	$700	$275	$3,901	$1,761	20.0
$0	942	209	80	2,037		
$1 to $49	1,034	210	94	724	48	2.3
$50 to $99	1,018	235	166	667	53	2.8
$100 to $249	1,402	313	119	789	160	6.1
$250 to $499	1,522	395	145	901	347	11.7
$500 to $999	2,288	498	202	1,281	590	13.8
$1,000 to $2,499	4,445	897	333	2,642	1,515	18.2
$2,500 and over	12,629	1,743	695	17,233	8,031	24.9

Of the 927 farms reporting no income in 1899, 516 were farms of from 100 to 175 acres each, and 87.3 per cent of them were operated by owners. This would indicate that they were homesteads taken up too late for cultivation in 1899.

There were farms, also, from which no reports of the products of 1899 could be secured, as the persons in charge, June 1, 1900, did not operate the farms during the preceding year. To this extent the reports fall short of giving a complete statement of farm products in 1899.

LIVE STOCK.

At the request of the various live-stock associations of the country, a new classification of domestic animals was adopted for the census of 1900. The age grouping for neat cattle was determined by their present and prospective relations to the dairy industry and the supply of meat products. Horses and mules are classified by age, and neat cattle and sheep by age and sex. The new classification permits a very close comparison with previous census reports.

Table 14 presents a summary of live-stock statistics.

TABLE 14.—DOMESTIC ANIMALS, FOWLS, AND BEES, ON FARMS AND RANGES, JUNE 1, 1900, WITH TOTAL AND AVERAGE VALUES, AND NUMBER OF DOMESTIC ANIMALS NOT ON FARMS OR RANGES.

LIVE STOCK.	Age in years.	ON FARMS AND RANGES.			NOT ON FARMS OR RANGES.
		Number.	Value.	Average value.	Number.
Calves	Under 1	187,533	$2,229,419	$11.89	1,301
Steers	1 and under 2	113,179	2,396,473	21.17	341
Steers	2 and under 3	113,368	3,379,211	29.81	207
Steers	3 and over	85,303	3,411,580	39.99	256
Bulls	1 and over	14,556	785,577	53.97	38
Heifers	1 and under 2	97,899	2,002,199	20.45	354
Cows kept for milk	2 and over	45,036	1,886,580	41.89	3,281
Cows and heifers not kept for milk.	2 and over	311,513	9,270,977	29.76	680
Colts	Under 1	39,838	364,743	9.16	575
Horses	1 and under 2	44,850	839,334	18.71	650
Horses	2 and over	245,284	6,584,595	26.84	16,050
Mule colts	Under 1	576	12,806	22.23	34
Mules	1 and under 2	404	12,021	29.75	6
Mules	2 and over	1,749	77,914	44.55	321
Asses and burros	All ages	128	16,008	125.06	17
Lambs	Under 1	1,955,269	3,806,529	1.95	26
Sheep (ewes)	1 and over	2,995,795	10,105,384	3.37	14
Sheep (rams and wethers).	1 and over	1,219,419	4,253,491	3.49	57
Swine	All ages	49,496	281,402	5.69	933
Goats	All ages	1,713	7,870	4.59	10
Fowls:[1]					
Chickens[2]		531,774	296,806		
Turkeys		12,637			
Geese		2,629			
Ducks		9,639			
Bees (swarms of)		1,801	8,139	4.52	
Unclassified			132,775		
Value of all live stock.			52,161,833		

[1] The number reported is of fowls over 3 months old. The value is for all, old and young.
[2] Including Guinea fowls.

The total value of all live stock on farms and ranges, June 1, 1900, was $52,161,833, of which 45.0 per cent represents the value of neat cattle, exclusive of dairy cows; 34.8 per cent, that of sheep; 14.9 per cent, that of horses; 3.6 per cent, that of dairy cows; 0.6 per cent, that of poultry; and 1.1 per cent, the value of all other live stock.

The average value of horses is low, because the Indian ponies on four reservations are included in the report. These ponies number thousands and are valued at from $3 to $10 per head. The unusually high average value of calves is due in part to the great demand for beef cattle, which resulted in a thinning of the herds in the period just preceding the enumeration.

No reports were secured of the value of live stock not on farms or ranges, but it is probable such animals have higher average values than farm or range animals. Allowing the same averages, however, the total value of the domestic animals not on farms is $677,287, or 1.3 per cent of the total value of farm live stock. Exclusive of poultry and bees not on farms, the total value of live stock in the state is approximately $52,839,120.

CHANGES IN LIVE STOCK KEPT ON FARMS AND RANGES.

The following table shows the changes since 1850 in the numbers of the most important domestic animals.

TABLE 15.—NUMBER OF SPECIFIED DOMESTIC ANIMALS ON FARMS AND RANGES: 1870 TO 1900.

YEAR.	Dairy cows.	Other neat cattle.	Horses.	Mules and asses.	Sheep.[1]	Swine.
1900	45,036	923,351	329,972	2,857	4,215,214	49,496
1890[2]	24,143	667,755	142,959	959	1,859,016	17,132
1880[2]	11,308	161,079	35,114	858	184,277	10,278
1870	12,452	24,306	5,289	475	2,024	2,599

[1] Not including lambs.
[2] Exclusive of live stock on ranges.

The live-stock enumeration in 1880 and 1890 did not include domestic animals on ranges, hence, the figures presented in the table for those years are not strictly comparable with the figures for 1900. The numbers of animals on ranges in 1890 were estimated by special agents to be as follows: All neat cattle, 750,619; horses, 32,939; mules and asses, 145; sheep, 493,870; swine, 19. In the following comparisons between the number of animals reported in 1900 and the number reported in 1890, these estimates are disregarded.

The number of dairy cows reported, June 1, 1900, was nearly four times as great as the number reported in 1870; the increase between 1890 and 1900 was 86.5 per cent. The number of other neat cattle in 1900 includes 187,533 calves, and, as it is uncertain whether any calves were reported under this head in 1890, the increase shown for "other neat cattle" in the last decade is probably somewhat less than the figures indicate.

The number of horses reported in 1900 was sixty-five times as great as in 1870, and more than twice as great as in 1890. Sheep received little attention before 1870, but between 1880 and 1890 the number increased ninefold, and in the next decade it more than doubled. In 1900 nearly three times as many mules and asses were reported as in 1890. The number of swine increased rapidly in each decade, nearly three times as many being reported in 1900 as in 1890.

Notwithstanding the fact that in 1900 the enumerators were instructed to report no fowls under three months old, and that no such limitation was made in previous census reports, the census of 1900 shows more than twice as many chickens, turkeys, and ducks, and more than three times as many geese, as were reported in 1890.

ANIMAL PRODUCTS.

Table 16 is a summarized exhibit of the products of the animal industry.

TABLE 16.—QUANTITIES AND VALUES OF SPECIFIED ANIMAL PRODUCTS, AND VALUES OF POULTRY RAISED, ANIMALS SOLD, AND ANIMALS SLAUGHTERED ON FARMS AND RANGES IN 1899.

PRODUCTS.	Unit of measure.	Quantity.	Value.
Wool	Pounds	30,437,829	$5,136,658
Mohair and goat hair	Pounds	2,750	824
Milk	Gallons	115,696,214	[1] $1,669,978
Butter	Pounds	2,454,072	
Cheese	Pounds	30,924	
Eggs	Dozens	3,002,890	631,143
Poultry			398,487
Honey	Pounds	19,940	3,706
Wax	Pounds	130	
Animals sold			[2] 9,176,830
Animals slaughtered			906,816
Total			17,924,442

[1] Includes all milk produced, whether sold, consumed, or made into butter or cheese.
[2] Includes the value of butter and cheese, and of all milk sold or consumed.

The value of animal products reported in 1899 was $17,924,442. Of this value, 51.2 per cent represents the value of animals sold; 5.0 per cent, that of animals slaughtered; 28.7 per cent, that of wool, mohair, and goat hair; 9.3 per cent, that of dairy products; and 5.8 per cent, that of poultry, eggs, honey, and wax.

DAIRY PRODUCE.

The production of milk in 1899 was twice as great as in 1889. The production of butter on farms more than doubled, and that of cheese nearly trebled, in the decade.

Of the $1,669,978 given in Table 16 as the value of all dairy products in 1899, $727,803, or 43.6 per cent, represents the value of such products consumed on farms, and $942,175, or 56.4 per cent, the amount realized from sales. Of the latter amount, $611,496 was derived from the sale of 3,162,568 gallons of milk; $291,907, from 1,204,339 pounds of butter; $35,335, from 32,863 gallons of cream; and $3,437, from 21,532 pounds of cheese.

ANIMALS SOLD AND ANIMALS SLAUGHTERED.

The value of animals sold and animals slaughtered on farms was $10,083,646, or 42.8 per cent of the gross farm income. Of all farms reporting domestic animals, 6,689 farms, or 51.9 per cent, report sales of live animals, the average receipts per farm being $1,371.93; and 5,616 farms, or 43.6 per cent of the total number, report animals slaughtered, the average value per farm being $161.47. In obtaining these reports, the enumerators were instructed to secure from each farm operator a statement of the receipts from sales of live animals in 1899, less the amount paid for animals purchased during the year.

POULTRY AND EGGS.

The total value of the products of the poultry industry in 1899 was $1,029,630, of which amount 38.7 per cent represents the value of fowls raised and 61.3 per cent, that of eggs produced. Nearly four times as many eggs were produced in 1899 as in 1889.

WOOL.

The production of wool has increased very rapidly since 1870. The clip of 1899 was 30,437,829 pounds, or about three times as great as in 1889.

BEES AND HONEY.

The quantity of honey reported in 1890 was but 20 pounds, with no wax; while in 1899, 19,940 pounds of honey and 130 pounds of wax were produced.

HORSES AND DAIRY COWS ON SPECIFIED CLASSES OF FARMS.

Table 17 presents, for the leading groups of farms, the number of farms reporting horses and dairy cows, the total number of these animals, and the average number per farm. In computing the averages presented, only those farms which report the kind of stock under consideration are included.

TABLE 17.—HORSES AND DAIRY COWS ON SPECIFIED CLASSES OF FARMS, JUNE 1, 1900.

CLASSES.	HORSES.			DAIRY COWS.		
	Farms reporting.	Number.	Average per farm.	Farms reporting.	Number.	Average per farm.
Total	12,464	329,972	26.5	9,526	45,036	4.7
White farmers	12,166	321,549	26.4	9,418	44,591	4.7
Colored farmers	298	8,423	28.3	108	445	4.1
Owners [1]	11,004	237,141	21.6	8,314	38,163	4.6
Managers	413	71,281	172.6	315	2,700	8.6
Cash tenants	477	14,631	30.7	441	2,591	5.9
Share tenants	570	6,919	12.1	456	1,582	3.5
Under 20 acres	526	18,823	35.8	302	1,614	5.3
20 to 99 acres	868	8,488	9.8	643	2,669	4.2
100 to 174 acres	5,152	76,429	14.8	3,718	14,563	3.9
175 to 259 acres	840	12,437	14.8	673	3,134	4.7
260 acres and over	5,078	213,795	42.1	4,190	23,056	5.5
Hay and grain	3,488	44,925	12.9	2,617	9,189	3.5
Vegetable	546	4,151	7.6	334	912	2.7
Fruit	67	392	5.9	52	128	2.5
Live stock	5,826	257,190	44.1	4,385	20,327	4.6
Dairy produce	1,104	11,512	10.4	1,153	11,293	9.8
Miscellaneous [2]	1,433	11,802	8.2	985	3,187	3.2

[1] Including "part owners" and "owners and tenants."
[2] Including florists' establishments and nurseries.

CROPS.

The following table gives the statistics of the principal crops of 1899.

TABLE 18.—ACREAGES, QUANTITIES, AND VALUES OF THE PRINCIPAL FARM CROPS IN 1899.

CROPS.	Acres.	Unit of measure.	Quantity.	Value.
Corn	3,301	Bushels	75,838	$41,626
Wheat	92,132	Bushels	1,899,683	1,077,210
Oats	133,938	Bushels	4,746,231	1,790,938
Barley	22,848	Bushels	844,140	341,308
Rye	2,003	Bushels	33,120	16,546
Buckwheat	9	Bushels	168	98
Flax seed	16	Bushels	220	268
Clover seed		Bushels	374	1,963
Grass seed		Bushels	852	1,719
Hay and forage	875,712	Tons	1,059,361	5,974,850
Tobacco	1	Pounds	200	60
Dry beans	101	Bushels	1,110	2,221
Dry peas	1,512	Bushels	32,265	33,273
Potatoes	9,613	Bushels	1,332,062	661,163
Onions	151	Bushels	29,113	22,612
Miscellaneous vegetables	4,121			356,130
Sorghum sirup	[1] 2	Gallons	100	70
Small fruits	554			79,891
Orchard fruits	[2] 5,571			[3] 59,414
Grapes	[2] 10	Centals	13	[4] 173
Forest products				176,134
Flowers and plants	17			33,630
Nursery products	62			17,825
Miscellaneous				[5] 3,348
Total	1,151,674			10,692,515

[1] Sorghum cane.
[2] Estimated from number of vines or trees.
[3] Including value of cider, vinegar, etc.
[4] Including value of wine, raisins, etc.
[5] This value was derived from products for which no acreage was reported.

Of the total value of crops in 1899, hay and forage, with 76.0 per cent of the total acreage, contributed 55.9 per cent, while cereals, with but 22.1 per cent of the total acreage, furnished 30.6 per cent of the value. The percentages of the total value contributed by the remaining crops are as follows: Vegetables, including potatoes and onions, 9.7 per cent; fruits and forest products, 2.9 per cent; and all other products, 0.9 per cent.

The average values per acre for the various crops were as follows: Flowers and plants, $1,978.24; nursery products, $287.50; onions, $149.75; small fruits, $144.21; miscellaneous vegetables, $86.43; potatoes, $68.78; cereals, $12.85; and hay and forage, $6.82. The crops yielding the highest returns per acre were grown upon very highly improved land. Their production required a relatively great amount of labor, and large expenditures for fertilizers.

CEREALS.

Table 19 is an exhibit of the changes in cereal production since 1869.

TABLE 19.—ACREAGE AND PRODUCTION OF CEREALS: 1869 TO 1899.

PART 1.—ACREAGE.

YEAR.[1]	Barley.	Buckwheat.	Corn.	Oats.	Rye.	Wheat.
1899	22,848	9	3,301	183,938	2,003	92,132
1889	4,652	13	1,019	52,768	14	18,696
1879	1,323	34	197	24,691	15	17,665

[1] No statistics of acreage were secured prior to 1879.

PART 2.—BUSHELS PRODUCED.

1899	844,140	168	75,838	4,746,231	33,120	1,899,683
1889	160,902	128	14,225	1,535,615	188	457,607
1879	39,970	437	5,649	900,915	430	469,688
1869	25,756	988	320	149,367	1,141	181,184

The development of agriculture in the western and southern parts of Montana during the past thirty years has resulted in a marked increase in the production of cereals. Since 1879 the total area devoted to cereals has increased from 43,925 acres to 254,231 acres. The total production increased from 418,756 bushels in 1869 to 7,599,180 bushels in 1899.

The largest acreages reported in 1900 were those of oats and wheat, each being more than five times as great in 1899 as in 1879. The acreages in barley and corn increased steadily, and, in 1899, were approximately seventeen times as great as in 1879. The area devoted to rye was nearly one hundred and thirty-four times as large as in 1879, but that under buckwheat decreased 73.5 per cent in the twenty years.

Oats, wheat, barley, and rye were reported in large quantities in the western and southern parts of the state, but the acreage under corn was greatest in the eastern counties. The few counties reporting buckwheat are in the southern part of the state.

HAY AND FORAGE.

In 1900, 10,656 farmers, or 79.7 per cent of the total number, reported hay and forage crops. Exclusive of cornstalks and corn strippings, an average yield of 1.2 tons per acre was obtained. The acreage in hay and forage in 1899 was 191.9 per cent greater than ten years before.

In 1899 the acreages and yields of the various kinds of hay and forage were as follows: Wild, salt, or prairie grasses, 567,587 acres and 545,841 tons; millet and Hungarian grasses, 3,690 acres and 4,705 tons; alfalfa or lucern, 68,959 acres and 186,498 tons; clover, 12,498 acres and 22,630 tons; other tame and cultivated grasses, 180,178 acres and 237,950 tons; grains cut green for hay, 40,374 acres and 57,837 tons; forage crops, 2,426 acres and 3,807 tons; and cornstalks, 90 acres and 93 tons.

In Table 18, the production of cornstalks and corn strippings is included under "hay and forage," but the acreage is included under "corn," as the forage secured was an incidental product of the corn crop.

ORCHARD FRUITS.

The changes in orchard fruits since 1890 are shown in the following table.

TABLE 20.—ORCHARD TREES AND FRUITS: 1890 AND 1900.

FRUITS.	NUMBER OF TREES.		BUSHELS OF FRUIT.	
	1900.	1890.	1899.	1889.
Apples	580,976	10,960	43,939	5,896
Apricots	193		1	
Cherries	20,164	806	807	9
Peaches	1,670		17	
Pears	8,422	370	24	2
Plums and prunes	18,449	699	373	36

Orchard fruits were reported in 1900 by 597 farmers, or 4.5 per cent of the total number. Nearly eighty per cent of the farms reporting orchard fruits were in the four western counties of Flathead, Missoula, Ravalli, and Madison. The value of orchard products was not reported by the census of 1890, but in 1879 the value of such products was $1,530. For 1899 the corresponding value was $59,414, a gain in twenty years of $57,884.

Apple trees constituted 91.6 per cent of the fruit trees shown in Table 20, and yielded 97.3 per cent of the fruit reported. The number of trees in 1900 was fifty times as great as in 1890. Cherries stand second to apples in importance, and plums and prunes third. Cherries, plums, and prunes, together constitute only 6.7 per cent of the total number of orchard trees in the state, and yielded but 2.6 per cent of the total crop in 1899, but show large gains since 1890.

The growing of peach and apricot trees is of comparatively recent origin in the state, having sprung up within the last decade. In 1890 Missoula was the only county that reported pears, while in 1900, 8,422 pear trees were reported from eleven counties.

In addition to the trees given in Table 20, there were 807 unclassified fruit trees, with a yield of 31 bushels of fruit. The value of orchard products given in Table 18 includes the value of 68 barrels of cider and 52 barrels of vinegar.

VEGETABLES.

The total area devoted to vegetables in 1899, including potatoes and onions, was 13,885 acres. Of this area, 69.2 per cent was devoted to the cultivation of potatoes, which were grown by almost one-half the farmers in the state, the average area per farm being 1.5 acres, and the average yield per acre, 138.6 bushels. In the decade from 1890 to 1900 the area devoted to potatoes increased from 4,204 to 9,613 acres, or 128.7 per cent.

The vegetables grown on 1,258 acres were reported in detail, but for 2,863 acres no detailed reports were received. The acreages of vegetables specifically reported were as follows: Cabbages, 418 acres; turnips, 198; carrots, 196; sweet corn, 142; pease, 103; and other vegetables, 201. As a rule vegetables were grown for home use only, but in the vicinity of the larger cities there are a few market gardens, some of them conducted by Chinese.

SMALL FRUITS.

The total area used in cultivation of small fruits in 1899 was 554 acres, distributed among 1,374 farms. Of this area, 281 acres, or 50.7 per cent, were devoted to strawberries, the total production of which was 532,260 quarts. They were grown principally in Ravalli and Missoula counties. The acreages and production of other berries were as follows: Currants, 120 acres and 252,860 quarts; raspberries and Logan berries, 80 acres and 110,795 quarts; gooseberries, 51 acres and 115,390 quarts; blackberries and dewberries, 18 acres and 17,970 quarts; and other berries, 4 acres and 4,610 quarts.

The value of the small fruits grown was $79,891, an average of $58.14 per farm. Of the total value, 62.0 per cent was contributed by Flathead, Ravalli, and Missoula counties.

FLORICULTURE.

The area devoted to the cultivation of flowers and ornamental plants in 1899 was 17 acres, and the value of the products sold therefrom, $33,630. These flowers and plants were grown by 19 farmers and florists, of whom 11 made commercial floriculture their principal business. These 11 proprietors reported a glass surface of 107,100 square feet. They had invested in land, buildings, implements, and live stock, $61,375, of which $24,000 represents the value of buildings. Their sales of flowers and plants amounted to $30,132, and of other products, $50. They expended $8,770 for labor and $222 for fertilizers. The average gross income per farm was $2,744.

In addition to the 11 principal florists' establishments, 50 farms and market gardens made use of glass in the propagation of flowers, plants, or vegetables. They had an area under glass of 36,155 square feet, making, with the 80,325 square feet belonging to the florists' establishments, a total of 116,480 square feet.

NURSERIES.

The total value of nursery products sold in 1899 was $17,825, reported by the operators of 13 farms and nurseries. Of this number, 5 derived their principal income from the nursery business. They had 754 acres of land, valued at $45,000, and buildings, implements, and live stock, valued at $15,605. The value of their products not fed to live stock in 1899 was $19,885, of which $16,710 represents the value of nursery stock, and $3,175 that of other products. The expenditure for labor was $1,450, and for fertilizers, $60. The average income for each farm reporting (including value of products fed to live stock) was $3,998.

LABOR AND FERTILIZERS.

The total expenditure for labor on farms in 1899, including the value of board furnished, was $5,077,340, an average of $380 per farm. The average expenditure was $797 for florists' establishments, $634 for live-stock farms, $290 for nurseries, $228 for hay and grain farms, $151 for dairy farms, $120 for fruit farms, and $108 for vegetable farms. "Managers" expended for labor an average of $2,886 per farm; "cash tenants," $253; "owners," $215; and "share tenants," $170. White farmers expended $386 per farm, and colored farmers, $122.

Fertilizers purchased in 1899 amounted to $3,940, a decrease since 1890 of $817. The average expenditure was $20 for florists' establishments, $12 for nurseries, $2 for fruit farms, and $1 for vegetable farms. The average for all farms was only about 30 cents.

INDIAN RESERVATIONS.

Montana, once the famous hunting ground and battlefield of many Indian tribes, is now the quiet home of many of these same tribes, which are slowly adopting the customs and occupations of the white man. Here are found the Piegan, Crow, Flathead, Sioux, Assiniboin, Grosventre, Northern Cheyenne, and a few small bands of other tribes. They are collected on six reservations, namely, Blackfeet, Crow, Flathead, Fort Belknap, Fort Peck, and Northern Cheyenne.

Their principal occupations are agriculture and stock raising; the latter industry is receiving the greater attention at present, as all the reservations have ample ranges, fairly well watered. But little of their land is cultivable without irrigation, and, as the Crows alone have an adequate system, farming operations are limited, and progress in that industry is necessarily very slow.

BLACKFEET RESERVATION.

Blackfeet reservation, the most northern of all reservations, is located in the northwestern part of Montana and contains an area of 2,750 square miles. The Indians here are the Piegan, with a few Blood and Blackfeet, all of Algonquin stock, numbering 2,256. The land consists principally of foothills, valleys, and rolling prairies, naturally adapted to grazing. The seasons have proven too short, in this high altitude, for successful agriculture,

although there are a few sheltered spots where, in favorable seasons, vegetables and some cereals mature with irrigation.

Irrigation on this reservation has been neither systematic nor scientific; in some localities the Indians have done considerable ditch work, with the assistance of an engineer to run the lines, one ditch constructed in 1898 having a length of 7 miles. Many of the ditches are out of repair, while others are entirely worthless. The necessity for scientific irrigation grows more apparent each year.

Farming operations consist principally in cutting wild hay for stock-feeding purposes. The crop in 1899 was 5,000 tons, being short on account of heavy and continued rains during the harvesting season, which spoiled large quantities of new-mown hay. On the school farms and some protected tracts they have succeeded in raising vegetables, and wheat and oats, in favorable years.

The first issue of live stock made to the Blackfeet was in 1890, when they received 850 head; since that time several issues have been made them, and they are beginning to realize a profit from their herds. The stock is issued to the Indians individually, and they are required to care for it, each Indian having his particular brand; in this way better results are obtained than when cattle are owned by the tribe, and herded together. They met with severe losses during the blizzards of 1898, when 40 per cent of their stock perished from a lack of hay and shelter. Better facilities have since been provided, and cattle and ponies are fed at least during a portion of the winter. The Indians sell annually a large amount of beef to the Government. The reports show a large amount of stock owned by white men who have married Indian women, only 15 out of the 36 stockmen reporting being Indians. Dairy cows are owned by 8 Indians; a few, also, have chickens and swine.

CROW RESERVATION.

The Crow reservation, comprising, in 1900, an area of 5,475 square miles, is situated in the extreme southern part of Montana. The climate of this region is subject to long, dry spells, and irrigation is a necessity in order to carry on agriculture successfully. The valleys of the Big Horn and Little Big Horn contain immense areas of rich, agricultural land, upon which an unlimited supply of water is easily conveyed. The range also is of exceptional quality, bench lands affording excellent grazing facilities.

As a tribe the Crows are peaceable, and readily comply with instructions; agriculture, stock raising, work on irrigation ditches, and freighting government supplies, now constitute their general occupations. Agriculture is the principal pursuit, and in it they are making steady progress.

A most important step in the direction of civilization, and industrial improvement, is the irrigation system. This system ranks among the finest in the United States, and is one of the largest and most expensive. The total length of the main ditches is 78 miles, covering approximately 70,000 acres of land.

The Big Horn Canal, now nearing completion, is the most extensive. Taken from the Big Horn River as it leaves a canyon in the mountains, it has a length of 32 miles, a width of 30 feet on the bottom, and covers approximately 47,000 acres. The headgate is a permanent structure of solid masonry, comparing favorably with any of its kind; the flow through the weir is controlled by five regulating gates of cast iron, which are raised by screws and hand wheels with ball-bearing attachments. Frequent landslides, and an excessive inflow into the excavation, have made the work on this structure very difficult and expensive. The Fort Smith cut on this canal was also an expensive piece of excavation, extending for three-fourths of a mile and containing 200,000 cubic yards of material, mostly loose rock, cemented gravel, and a strata of shale and solid rock.

Four ditches have been taken from the Little Big Horn River—the first, or Agency ditch, 10 miles in length, covers 5,000 acres; the second, also 10 miles in length, covers 5,000 acres; the third, 8 miles in length, covers 5,000 acres; and the fourth, 6 miles in length, covers 3,000 acres. A ditch has also been constructed on Pryor Creek, which waters about 5,000 acres.

All the ditch work of the system is of a substantial and permanent character. The expense has been borne by the Indians themselves, and is being paid from their annuity funds, and money received through grazing leases. The policy of the Government in employing Indian labor has been of great benefit and advantage to them; besides providing employment, it has taught them habits of industry, and has given them a knowledge of irrigation which they could have acquired in no other way.

The Crows raise wheat, oats, vegetables, and also cut large quantities of wild hay. The results of agricultural operations in 1899 amounted to 70,000 bushels of wheat, 10,000 bushels of oats, 5,145 bushels of vegetables, and 4,000 tons of hay. Farming is carried on by individual allotees, and also on the communal system under the management of Government farmers; the greater interest taken in individual farms, and the better results obtained, make that system preferable, and it will be adopted exclusively when allotments are completed. The communal system takes away all sense of responsibility and individual interest, which are essential elements of success. The abandonment of Fort Custer has cut off a large market for hay and oats, which they formerly supplied. The Indians own a steam-power flouring mill and from their wheat crop produced enough flour during the census year to supply their own needs, and sold 450,000 pounds to the Cheyenne Indians and the Government school and agency.

Stock raising is also an industry of considerable importance among this tribe; they have 3,510 range cattle owned by individuals and in common. Lack of shelter and frequent attacks by wolves during the winter months, have checked

the increase materially. But 10 dairy cows are owned by the Crows. As on many reservations, the Indian pony is a serious problem. There are 35,000 on the range, the larger number of them inbred and worthless. During the census year, 12,000 head were disposed of at prices ranging from $3 to $10. The tribe's sales of live stock amounted to $58,750, and, in addition, the value of meat and other products of animals slaughtered, was $29,775.

FORT BELKNAP RESERVATION.

Fort Belknap reservation is situated in Choteau county, in the north central part of Montana, and has an area of 840 square miles. This tract is adapted to stock raising, as the range is ample and well watered. Agriculture, in such an arid region, is practically impossible without irrigation, although only a comparatively small area would be cultivable even with a water supply.

Two tribes are represented here, the Grosventre (a division of the Arapahoe) of Algonquin stock, and the Assiniboin, of Siouan stock, with a total population of 1,312. Little or no farming operations were carried on in 1899, owing to a late, cold spring, which made it impossible to get seed into the ground in time for crops to mature. In favorable seasons, oats, wheat, and vegetables are grown, the patches of grain averaging in size from 5 to 10 acres. Some attempts have been made at irrigation, but so far results have been meager and unsatisfactory. Two small systems now in course of construction will water 8,000 acres, which will at least assure a hay crop sufficient to feed stock through the winter months. The Indians are fairly well supplied with farming implements and machinery.

Live-stock interests are paramount at Fort Belknap also, and every effort is being put forth to induce the Indians to care for their animals. Heretofore their cattle have grazed in common, but this method is being discouraged and small communities are beginning to close herd together in order to prevent losses by straying. They own some good horses in addition to the large herds of useless Indian ponies.

FORT PECK RESERVATION.

Fort Peck reservation, comprising an area of 2,775 square miles, is situated in Valley county in the northeastern part of Montana, the Missouri River forming its southern boundary. This tract is principally a grazing country, well watered and containing an ample supply of timber. Agriculture is very uncertain without irrigation, owing to the light, dry soil and insufficient rainfall. Some of the bottom lands would produce well with irrigation, but, in spite of an abundant water supply, the difficulty of conducting it upon the land is very great.

This reservation is occupied by the Assiniboin and Brule, Santee, Teton, Hunkpapa, and Yanktonai Sioux, all of Siouan stock, having a total population of 1,946.

Farming operations consist principally in cutting wild hay for winter feeding, but the majority of the 113 Indian farmers raised small patches of corn and potatoes, and two reported wheat and oats. The number of acres devoted to cereals and vegetables by individual farmers was very small, ranging usually from 1 to 5 and never exceeding 10 acres. There is but one irrigation ditch on the reserve; it is taken out of Poplar River and has a length of 7 miles. In favorable seasons the ditch will cover 200 acres of agricultural land, and considerable hay land, but in dry seasons it contains no water.

These Indians have considerable live stock, consisting of horses and cattle. In former years the Assiniboin raised sheep, but these have been sold and range cattle substituted. They take good care of their animals and the herds are rapidly increasing; many reported small sales of live stock. The horses owned at Fort Peck are a better grade than the average Indian pony. Dairy cows and chickens are found on some farms.

FLATHEAD RESERVATION.

Flathead reservation, embracing an area of 2,240 square miles, lies in Flathead and Missoula counties, in the western part of Montana. The reservation is divided into four mountain valleys, in which the land is well adapted to both agriculture and stock raising. The soil is a sandy loam and somewhat gravelly, but fertile, and with irrigation, produces fine crops of grain, fruit, and vegetables. Approximately 500,000 acres are cultivable, of which three-fourths will require irrigation. The mountain streams furnish a never-failing water supply, easily diverted. The ranges are in fair condition, although somewhat overtaxed. Camas Prairie, 8 miles long and 40 miles wide, is a natural meadow. There is also an abundance of timber here for the construction of houses and fences.

Five tribes inhabit this reservation, namely, Flathead, Pend-d'Oreille, Spokan, and Lower Kalispel, all of Salishan stock, and the Kutenai of Kitunahan stock, comprising a total population of 2,142. There are 128 Indian farmers; the area cultivated by individual Indians ranges from 5 to 375 acres, the majority cultivating less than 100 acres.

There is no regular system of irrigation on the reservation. Much of the land now under cultivation lies along the river and creek bottoms, requiring little or no irrigation to grow successful crops, or is land upon which water can be turned with but little labor, where individual ditches have been made. The Government has constructed two ditches, one 5 miles long covering 3,000 acres and the other 2½ miles long, covering 2,000 acres. Systematic irrigation is all important at the present time, and it is expected that the Government will build additional ditches in the near future.

Wheat, oats, and wild hay are the principal crops, some clover, alfalfa, and other tame grasses being cultivated. There is a flour mill on the reserve, and the wheat raised by the Indians furnishes flour enough for home consumption and also for the demand of traders and neighboring ranchmen. Most farms have small gardens in which are found potatoes, cabbages, onions, and sweet corn, and fre-

quently small fruits. Orchards of bearing apple trees are quite common, and a few cherry, plum, and pear trees are also found.

Of equal importance with agriculture are the stock-raising interests which are rapidly increasing. The high prices received during 1898 and 1899 caused unusually large sales, and the number of cattle on the range at present is less than in former years. The majority of Indian farmers reported sales of live stock and animal products, one Indian's sales during 1899 amounting to $10,100. The larger number of sales were less than $1,000, but 19 reported sales of $1,000 or over, and 5, of $4,000 or over. A large number of farmers own dairy cows and reported milk and butter; chickens and swine are also quite common. A herd of 25 buffaloes and a few sheep and goats constitute further possessions of live stock.

NORTHERN CHEYENNE RESERVATION.

Northern Cheyenne reservation, containing an area of 765 square miles, is located in Rosebud county, in southeastern Montana. Most of the land is hilly and broken, but well adapted to grazing. Large areas of pine timber form a protection to the stock in stormy weather. Only the bottom lands of the four small creeks running through the reservation are suitable for agriculture. Approximately 20,000 acres would be cultivable with sufficient irrigation, but the water supply is very limited.

The Northern Cheyenne, of Algonquin stock, inhabit this reservation, and number in all 1,454. Together with the Piegan they are the most western tribe of this stock in the United States.

At the time the census was taken, nearly all the available agricultural land was in the hands of a few white settlers who had taken up claims before the Cheyenne selected this tract as their home. Consequently, the Indians have had little opportunity to advance along agricultural lines. However, seed has been furnished every year, and many have planted small patches of corn and potatoes, but the drought often destroyed their crops before they matured. Great difficulty has been experienced in inducing some of the Indians to properly care for their gardens, as they plant the seed and simply await results without giving it further attention. Their crops in 1899 were a failure, with the exception of wild hay. The white farmers on the reservation have constructed a number of small irrigation ditches, which will water approximately 900 acres. With this irrigated land now in possession of the Indians, they should begin to make material progress in agriculture. The principal crops of the white men were wheat, oats, and wild hay; they also raised a small amount of barley, corn, and alfalfa.

The live stock of the Indians consists of Indian ponies and a few American horses. When they come to realize the relative value of range cattle and ponies, and substitute the former for the latter, they will have taken a step towards self-support.

IRRIGATION STATISTICS.

The necessity for irrigation in Montana is not so imperative as in states farther south. The table-lands, and cultivable areas of the state generally, are of low elevation, as the slope of the Great Plains which constitute a large part of the state, is toward the north. By reason of its diversified physical character, comprising lofty and detached mountain ranges, broad valleys, and vast table-lands, the western end of the state receives a larger precipitation than the eastern plains. The sketch map represents by areas in solid black the main regions in which irrigation has been successfully applied to any considerable extent.

The period between 1870 and 1900 has witnessed a remarkable change in agricultural values. The census of 1870 reported live stock on farms in Montana valued at $1,818,693, and farm lands, including buildings and implements, valued at $729,193, or about 40 per cent of the value of live stock. In that year no report was secured of the value of live stock on the range or public domain. If account were taken of this fact, it would be seen that in 1870 the value of live stock in Montana was at least three times that of all farm land and buildings. In the thirty years succeeding, the live-stock interests gained enormously, and in 1900 had a value nearly forty times that in 1870, but the number and value of farms have increased so much more rapidly that in 1900 they were worth $62,026,090, while the live stock had a value of $52,161,833, or 15.9 per cent less. In 1870 farming was but an incident to live-stock raising, while in 1900 the conditions were reversed and the keeping of animals was less important than other agricultural operations. This tremendous increase in agriculture is largely due to the successful application of irrigation in the cultivation of hay and forage, cereals, fruits, and vegetables.

Table A shows by counties the changes between 1889 and 1899 in the number of irrigators and the acreage irrigated.

TABLE A.—NUMBER OF IRRIGATORS AND ACRES IRRIGATED IN 1889 AND 1899, WITH PERCENTAGES OF INCREASE.

COUNTIES.	NUMBER OF IRRIGATORS.			ACRES IRRIGATED.		
	1899.	1889.	Per cent of increase.	1899.	1889.	Per cent of increase.
The State[1]	8,043	3,706	117.0	951,154	350,582	171.3
Beaverhead	457	294	55.4	138,022	42,606	223.9
Broadwater[2]	190			30,144		
Carbon[3]	716			51,287		
Cascade[4]	218	78	[5]198.6	27,593	4,411	[5]525.5
Choteau[6]	397	39	1,366.7	49,086	2,834	2,718.3
Teton[7]	175			30,784		
Custer	233	60	288.3	18,659	4,302	333.7
Dawson[8]	20	12	483.3	999	194	5,506.7
Valley[9]	50			9,878		
Deerlodge[10]	495	470	[5]5.3	78,118	50,948	[5]53.3
Fergus	452	251	80.1	71,152	30,401	134.0
Flathead[11]	116			6,074		
Missoula[12]	364	504	154.8	15,500	22,404	296.5
Ravalli[13]	804			67,249		
Gallatin	659	434	51.8	60,267	46,901	28.5
Granite[14]	168			18,513		
Jefferson[15]	206	184	[5]13.0	16,149	15,105	[5]6.9
Lewis and Clarke[16]	370	231	[5]60.6	30,663	15,441	[5]98.6
Madison	593	345	71.9	74,980	36,819	103.6
Meagher[17]	173	260	[5,18]33.5	43,213	39,324	[5]9.9
Park[19]	415	330	[5]25.8	29,917	19,735	[5]51.6
Silverbow	161	75	114.7	10,049	5,968	68.4
Sweet Grass[20]	326			37,494		
Yellowstone[21]	285	144	97.9	35,364	13,189	168.1

[1] Exclusive of Indian reservations.
[2] Organized from parts of Jefferson and Meagher counties in 1897.
[3] Organized from parts of Park and Yellowstone counties in 1895.
[4] Part of Meagher county annexed since 1890.
[5] Comparison with figures of 1889 insufficient, as important changes in county lines have been made.
[6] Part taken to form Teton county in 1893.
[7] Organized from part of Choteau county in 1893.
[8] Part taken to form Valley county in 1893.
[9] Organized from part of Dawson county in 1893.
[10] Part taken to form Granite county in 1893, and part annexed to Flathead, and Lewis and Clarke counties since 1890.
[11] Organized from part of Missoula in 1893; part of Deerlodge county subsequently annexed.
[12] Parts taken to form Flathead and Ravalli counties in 1893.
[13] Organized from part of Missoula county in 1893.
[14] Organized from part of Deerlodge county in 1893.
[15] Part taken to form Broadwater county in 1897.
[16] Parts of Deerlodge and Meagher counties annexed since 1890.
[17] Parts taken to form part of Sweet Grass county in 1895, and part of Broadwater county in 1897; parts annexed to Cascade, and to Lewis and Clarke counties since 1890.
[18] Decrease.
[19] Parts taken to form parts of Carbon and Sweet Grass counties since 1890.
[20] Organized from parts of Meagher, Park, and Yellowstone counties in 1895.
[21] Parts taken to form parts of Carbon and Sweet Grass counties since 1890.

A glance at Table 1 and Table A discloses the intimate relation between the growth of irrigation and the general development of agriculture. The number of farms outside of Indian reservations increased in ten years 132.9 per cent, the number of irrigators, 117.0 per cent, and the irrigated area, 171.3 per cent.

Table B gives certain statistics of irrigation in 1900 by counties, exclusive of Indian reservations.

TABLE B.—NUMBER OF IRRIGATED FARMS COMPARED WITH TOTAL NUMBER OF FARMS, AND IRRIGATED ACREAGE COMPARED WITH TOTAL IMPROVED ACREAGE, JUNE 1, 1900, WITH PERCENTAGES.

COUNTIES.	NUMBER OF FARMS.			NUMBER OF ACRES IN FARMS.		
	Total.	Irrigated.	Per cent irrigated.	Improved.	Irrigated.	Per cent improved land irrigated.
The State[1]	13,047	8,043	61.6	1,697,424	951,154	56.0
Beaverhead	518	457	88.2	168,451	138,022	81.9
Broadwater	222	190	85.6	49,484	30,144	60.9
Carbon	871	716	82.2	77,165	51,287	66.5
Cascade	1,144	218	19.1	118,911	27,593	23.2
Choteau	762	397	52.1	90,242	49,086	54.4
Custer	804	233	29.0	90,359	18,659	20.6
Dawson	259	20	7.7	19,645	999	5.1
Deerlodge	564	495	87.8	92,489	78,118	84.5
Fergus	732	452	61.7	121,389	71,152	58.6
Flathead	767	116	15.1	64,109	6,074	9.5
Gallatin	950	659	69.4	172,287	60,267	35.0
Granite	205	168	82.0	26,272	18,513	70.5
Jefferson	235	206	87.7	23,176	16,149	69.7
Lewis and Clarke	531	370	69.7	63,682	30,663	48.2
Madison	674	593	88.0	111,836	74,980	67.0
Meagher	198	173	87.4	52,419	43,213	82.4
Missoula	615	364	59.2	47,982	15,500	32.3
Park	532	415	78.0	44,566	29,917	67.1
Ravalli	891	804	90.2	81,012	67,249	83.0
Silverbow	215	161	74.9	13,383	10,049	75.1
Sweet Grass	402	326	81.1	39,495	37,494	94.9
Teton	347	175	50.4	49,768	30,784	61.9
Valley	226	50	22.1	21,278	9,878	46.4
Yellowstone	383	285	74.4	58,024	35,364	60.9

[1] Exclusive of Indian reservations.

Of the 13,047 farms in the state, excluding those in the Indian reservations, 8,043 are irrigated, and 5,004 are unirrigated. The acres in the irrigated farms number 5,822,995, in the unirrigated, 2,468,091. The value of all land in the irrigated farms, not including buildings, is $36,057,373, and of the unirrigated, $9,156,667. The value of all buildings on irrigated farms is $6,948,616, and on unirrigated, $2,241,354. Live stock on the irrigated farms has a value of $32,384,654, on unirrigated, $19,777,179. The irrigated farms are 61.6 per cent of the total number, and the corresponding percentage of acreage is 70.2; that of the value of land and improvements, exclusive of buildings, 79.7; buildings, 75.6; implements and machinery, 71.2; live stock, 62.1; and that of the total of all these forms of farm wealth is 67.9.

The average size of all farms, exclusive of the holdings of Indians, is 635 acres. The average size of irrigated farms is 724 acres, and the average amount of irrigated land on each irrigated farm is 118 acres. On the farms

making use of irrigation, the average value of products not fed to live stock is $5.55 per acre. In the counties, omitting Indian reservations, the average value per acre of land, exclusive of buildings, is, for all farms, $5.45; for unirrigated farms, $3.71; and for irrigated farms, $6.19. The average value of irrigated land per acre is $19.66; while that of the best irrigated land, suitable for the growing of alfalfa, is from $25 to $100; irrigated fruit land is even more valuable.

COST AND EXTENT OF IRRIGATING SYSTEMS.

The following table gives, by counties, the principal statistics relating to the cost and extent of the irrigating systems of the state.

TABLE C.—NUMBER, COST OF CONSTRUCTION, AND LENGTH OF MAIN CANALS AND DITCHES, AND ACREAGE IRRIGATED IN 1899.

COUNTIES.	CANALS AND DITCHES.			NUMBER OF ACRES.		Average area irrigated per mile of ditch.
	Number.	Cost of construction.	Length in miles.	Under ditches.	Irrigated.	
The State[1]	2,902	$4,683,073	6,812	1,818,600	951,154	140
Beaverhead	403	289,100	600	150,450	138,022	230
Broadwater	108	141,300	235	33,100	30,144	128
Carbon	171	230,000	457	90,000	51,287	112
Cascade	59	179,520	225	228,610	27,593	123
Choteau	105	180,595	276	114,000	49,086	178
Custer	111	259,535	163	37,144	18,659	114
Dawson	7	8,050	6	1,270	999	166
Deerlodge	156	303,000	300	85,000	78,118	260
Fergus	175	159,000	512	100,000	71,152	139
Flathead	33	55,350	65	7,250	6,074	93
Gallatin	114	446,369	458	89,800	60,267	132
Granite	57	109,000	140	30,000	18,513	132
Jefferson	74	64,786	118	32,000	16,149	137
Lewis and Clarke	127	133,500	250	120,000	30,663	123
Madison	200	393,880	680	180,000	74,980	110
Meagher	95	114,800	240	50,000	43,213	180
Missoula	96	87,029	180	21,000	15,500	119
Park	208	188,446	496	49,305	29,917	60
Ravalli	277	574,498	395	106,155	67,249	170
Silverbow	37	43,500	108	12,500	10,049	93
Sweet Grass	174	221,865	349	71,815	37,494	107
Teton	43	153,050	234	166,221	30,784	132
Valley	21	80,000	197	32,000	9,878	50
Yellowstone	51	266,900	178	60,980	35,364	199

[1] Exclusive of Indian reservations.

The total amount invested in ditches in Montana, to June 1, 1900, is approximately $4,683,073. The total value of irrigation products in 1899 was $7,230,042. No reports were received concerning the cost of irrigation ditches in the Indian reservations. The number of acres of land irrigated for each mile of ditch reported is 140, as compared with 124 in Arizona. The number of acres under ditch for each mile is 267. In Arizona it is 591. The average cost of construction per mile is $687.47, and per acre $4.92, for land actually irrigated in 1899. In Arizona the average cost of constructing the ditches was $2,954 per mile, and $24 per acre, for the land actually irrigated in the above year. This large difference in the cost of construction of irrigation systems is explained by the fact that the majority of the ditches in Montana are of private ownership, and without expensive dams and headgates. Most of the investments in irrigation ditches have been highly profitable, but few disappointments following the efforts of irrigators to reclaim the arid lands.

While it is known that Montana possesses considerable quantities of ground water, or so-called underflow, but few attempts have been made to utilize it for irrigation. The ample supply furnished by the streams and the comparatively inexpensive systems required to divert it upon the land, account for the fact that there were no reports of farms irrigated from wells.

VALUE OF LAND AND COST OF WATER.

The following table shows, by counties, the average values of farm land, with and without irrigation, and the cost of water.

TABLE D.—AVERAGE VALUE PER ACRE OF IRRIGATED AND UNIRRIGATED FARMS, AND OF IRRIGATED LAND, JUNE 1, 1900, WITH AVERAGE COST PER ACRE OF WATER RIGHT AND MAINTENANCE.

COUNTIES.	AVERAGE VALUE PER ACRE, EXCLUSIVE OF BUILDINGS, OF—				AVERAGE COST PER ACRE OF—	
	All farms.	Unirrigated farms.	Irrigated farms.	Irrigated land.	Water right.	Annual maintenance.
The State[1]	$5.45	$3.71	$6.19	$19.66	$3.12	$0.28
Beaverhead	7.48	3.38	7.69	18.24	2.01	0.20
Broadwater	8.94	5.43	9.27	16.74	4.49	0.16
Carbon	10.06	3.20	11.38	19.69	3.61	0.26
Cascade	4.83	4.09	5.87	15.04	1.41	0.31
Choteau	4.30	2.25	5.47	13.88	1.87	0.27
Custer	2.98	2.32	4.35	29.47	9.13	0.79
Dawson	2.20	2.01	3.06	12.19	7.19	0.39
Deerlodge	7.04	4.79	7.19	20.48	3.85	0.23
Fergus	4.58	2.16	4.91	12.70	1.60	0.21
Flathead	11.02	11.58	8.20	32.46	7.70	0.52
Gallatin	12.50	10.74	13.04	31.22	5.88	0.13
Granite	9.40	5.20	9.75	14.99	5.84	0.27
Jefferson	9.74	2.59	10.16	22.31	3.91	0.14
Lewis and Clarke	5.43	5.26	5.48	14.00	1.30	0.20
Madison	7.95	6.18	8.09	17.70	4.48	0.23
Meagher	2.78	1.25	2.82	12.49	2.61	0.14
Missoula	11.26	8.46	12.73	55.91	7.80	0.33
Park	5.45	4.73	5.54	15.73	3.57	0.33
Ravalli	16.26	6.44	17.17	37.46	5.92	0.12
Silverbow	9.09	5.54	9.58	23.77	4.32	0.17
Sweet Grass	3.68	2.32	3.84	21.31	3.32	0.68
Teton	4.88	4.22	5.33	14.82	1.03	0.32
Valley	3.68	3.52	3.91	18.47	2.80	0.15
Yellowstone	1.91	1.37	2.34	32.15	5.52	0.49

[1] Exclusive of Indian reservations.

IRRIGATED CROPS.

The relation of irrigation to the various agricultural operations can be noted in the following table, which shows the total and irrigated acreage and production of crops.

TABLE E.—TOTAL AND IRRIGATED ACREAGE, AND PRODUCTION OF CROPS, IN 1899, WITH PERCENTAGES.

CROPS.	ACRE.			PRODUCTION.			
	Total.	Irrigated.	Per cent irrigated.	Unit of measure.	Total.	Irrigated.	Per cent irrigated.
All crops	1,151,674	755,865	65.6				
Corn	3,301	929	28.1	Bushels	75,838	24,895	32.9
Wheat	92,132	37,710	40.9	Bushels	1,899,688	843,143	44.4
Oats	133,938	90,514	67.6	Bushels	4,746,231	3,367,671	71.0
Barley	22,848	18,666	81.7	Bushels	844,140	726,617	86.1
Rye	2,003	852	42.5	Bushels	33,120	16,210	48.9
Wild, salt, or prairie grasses	567,587	342,793	60.4	Tons	545,841	350,640	64.2
Millet and Hungarian grasses	3,690	3,419	92.7	Tons	4,705	4,396	93.4
Alfalfa or lucern	68,959	66,906	97.0	Tons	186,498	183,606	98.4
Clover	12,498	12,009	96.1	Tons	22,680	22,069	97.5
Other tame and cultivated grasses	180,178	142,635	79.2	Tons	237,950	195,654	82.2
Grains cut green for hay	40,374	21,255	52.6	Tons	57,837	32,985	57.0
Forage crops	2,426	1,783	73.5	Tons	[1] 3,900	3,045	78.1
Dry beans	101	65	64.4	Bushels	1,110	717	64.6
Dry pease	1,512	1,053	69.6	Bushels	32,265	21,912	67.9
Potatoes	9,613	6,976	72.6	Bushels	1,332,062	1,022,337	76.7
Onions	151	118	78.1	Bushels	29,113	22,767	78.2
Miscellaneous vegetables	4,121	2,645	64.2				
Small fruits	554	464	83.8				
Orchard fruits	[2] 5,571	[2] 4,978	89.4	Bushels	45,192	42,796	94.7
Other crops	117	95	81.2				

[1] Includes corn strippings.

[2] Estimated from number of trees.

The total number of acres of irrigated crops, as given above, is 755,865, while the total number of acres of land irrigated is 951,154, the difference, 195,289 acres, representing approximately, the area of pasture land irrigated. It is probable that a portion of the area upon which crops were reported as grown without irrigation, was really irrigated at some time during the year.

Table F shows, by counties, the value of the irrigated crops in 1899.

TABLE F.—VALUE OF CROPS PRODUCED, IN 1899, ON IRRIGATED LAND, BY COUNTIES.

COUNTIES.	All crops.	Hay and forage.	Cereals.	Vegetables.	Orchard fruits.	Small fruits.	Other crops.
The State[1]	$7,230,042	$4,336,311	$1,991,741	$775,289	$55,383	$67,811	$3,507
Beaverhead	617,067	481,015	119,623	16,425	4		
Broadwater	262,949	142,276	88,582	27,001	3,545	1,495	50
Carbon	475,722	200,386	219,485	51,604	2,744	1,172	331
Cascade	204,003	129,826	23,568	47,077	1,510	1,982	40
Choteau	239,700	193,677	29,494	16,091		238	200
Custer	144,508	127,255	8,291	8,772	75	115	
Dawson	12,137	5,686	3,356	3,043		52	
Deerlodge	602,598	415,420	105,652	78,054	77	3,395	
Fergus	467,097	319,190	120,176	25,995		1,262	474
Flathead	67,156	30,786	11,658	24,267	189	261	
Gallatin	783,149	186,478	558,199	34,645	451	3,314	62
Granite	159,103	111,531	29,116	18,211	13	232	
Jefferson	155,801	122,204	9,310	23,085	184	1,068	
Lewis and Clarke	300,084	193,968	38,495	65,158	150	2,313	
Madison	569,561	348,758	132,869	76,602	2,706	8,626	
Meagher	226,263	189,086	22,697	14,208	21	251	
Missoula	216,239	104,001	32,943	43,701	21,706	13,888	
Park	265,011	167,363	68,035	26,437	307	2,509	360
Ravalli	643,056	271,006	231,587	96,042	20,992	23,479	
Silverbow	77,937	62,670	3,334	11,876	1	56	
Sweet Grass	256,276	194,870	43,199	18,110		97	
Teton	100,209	71,204	21,343	7,162			
Valley	36,334	29,839	920	5,575			
Yellowstone	348,082	237,816	69,364	36,148	758	2,006	1,990

[1] Exclusive of Indian reservations.

DRAINAGE BASINS.

The main range of the Rocky Mountains crosses the northern boundary of the state about ninety miles east of its northwest corner, and in the form of a bow, with the center of the arch at Butte, extends southeasterly and then southwesterly to the junction with the Bitter Root range, the latter forming almost the entire boundary between Montana and Idaho. The extremely rugged character of the western portion gave to the state its name—Montana—"mountainous." More than two-thirds of the state is on the eastern slope of the Rockies and consists of high plains, the greater portions of which are comprised in the drainage basins of the Missouri and Yellowstone rivers, and as the Yellowstone is a tributary of the Missouri, the Missouri River basin practically includes two-thirds of the state. This basin has a total area at the head waters of 95,093 square miles, of which 13,315, or 14.0 per cent, are within the Dominion of Canada, leaving 81,778 acres, all of which, with the exception of a few square miles in Yellowstone National Park, are in the state of Montana. In the southwestern part of the state the basin attains its highest elevation, and its slope is gradual toward the north and east.

Three important streams, having their sources in the mountains, unite at different points in the state to form the Missouri River—the Jefferson, Madison, and Gallatin rivers.

The Jefferson River, formed by the union of the Big Hole and Beaverhead rivers, flows in a general northeasterly direction for about sixty miles. This drainage basin comprises a large area of irrigable lands, which, owing to low elevation and favorable position, are very highly cultivable. Many of its smaller branches flow through broad, open, and fertile valleys, excellently adapted to agriculture. The valley of the main stream is from 40 to 50 miles long and several miles wide. The drainage basin of this river includes all of Beaverhead, the southern part of Silverbow, the western part of Madison, and the southern part of Jefferson counties.

The Madison River rises in the National Park, flows westerly and northwesterly for about thirty miles through canyons, and then turns to the north and enters Madison Valley, from is from thirty to thirty-five miles long, by

eight to ten miles wide in the center, gradually narrowing at both ends. The elevation of the valley is about 5,000 feet, and agriculture is practiced therein to a marked degree.

The Gallatin River has its sources in the northwestern portion of the Yellowstone National Park and vicinity, and flows in a general northerly course, through a succession of narrow valleys and canyons, for a distance of about fifty miles from its head waters, and finally enters the Gallatin Valley, one of the finest agricultural areas of Montana, or any of the Western states. Its flow is augmented by that of the East Gallatin, which enters the valley at the lower end, draining the short range of mountains of the same name. The soil is very fertile, the climate temperate, and the farms in the valleys are among the most highly cultivated in the West.

Among the lesser affluents of the Missouri are the Teton, Marias, Judith, Musselshell, Sun, and Milk rivers.

The Yellowstone River rises in the National Park, to which it has given its name, and flows northward through wonderful canyons into the state of Montana, forming two noted cascades on the way. At Livingston it turns abruptly eastward and flows in a general easterly and northeasterly direction, to a junction with the Missouri at Fort Buford in North Dakota, near the eastern boundary of Montana.

The area of the Yellowstone Basin in Montana is approximately 36,312 square miles, and its general outline is triangular, the main stream flowing near the long side of the northern boundary of the basin. Almost the entire water supply comes from the streams heading in the Absaroka and Big Horn ranges in the southern part of the basin, Wyoming furnishing the greater part of it. These ranges, having an altitude of 10,000 feet or more, are snow clad, and furnish a large and perennial supply of water. The Yellowstone, where it joins the Missouri, carries nearly the same volume as the latter.

The Absaroka, Snowy, Big Horn, and Wind River ranges, in their great extent, elevation, and heavy precipitation, are important features of this basin, when irrigation is considered. The streams which drain their timbered slopes receive a late summer supply in the form of melting snows, which is available when most needed for irrigation.

On the mountain slopes, as a rule, are heavy forests, some of marketable value, and others suitable only for fuel. The timber area is estimated to be 11,320 square miles, and the firewood, 13,580 square miles; the remainder, 44,783 square miles, affords excellent grazing, only a small portion of it being cultivated.

The northeastern portion of the basin is an extension of the Great Plains, in which the streams have cut deep channels. On the eastern edge, the erosion is very marked, and the region is known as the Bad Lands—the country being similar to that in the vicinity of the Black Hills, wholly unfit for anything except grazing, and worth but little for that.